reduced atrial filling fraction being that Doppler includes the LV conduit filling volume. Compared to Doppler flow analysis, ABD provides a more detailed definition of LA dysfunction in pts with DC and restrictive physiology.

1071-41 Echocardiographic Assessment of Left Atrial Appendage Function Immediately Before and 24 Hours After Successful Cardioversion for Atrial Fibrillation

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Persistent mechanical dysfunction of left atrial appendage (LAA) after successful cardioversion in patients with atrial fibrillation may be associated with LAA thrombus development and embolization. However, LAA function after cardioversion has not been investigated systematically. We assessed LAA and left atrial function by transesophageal echo (TEE), immediately before and 24 hours after cardioversion to sinus rhythm, in 42 patients with nonvalvular atrial fibrillation (age 39–79 years, mean 64; male 64%).

Left atrial function, assessed by ECG-P wave and Doppler transmitral flow velocity profile, returned to normal after cardioversion in each of the 42 study patients. Left atrial appendage function, assessed as ejection flow velocity signal syncronized with ECG-P wave, returned to normal in 29 of the 42 patients (69%) and remained impaired in the remaining 13 (31%). At pre-cardioversion TEE, maximal LAA area was significantly larger in the patients with persistent LAA dysfunction compared to those with restored LAA function (maximal LAA area: 5.0 ± 1.6 and 3.8 ± 1.2 cm^2, respectively; $p < 0.02$). None of the other variables examined, including age, duration of atrial fibrillation, left atrial size, and left ventricular fractional shortening, differed significantly in the two groups.

Conclusions: Our findings indicate that: 1) Mechanical function of LAA is restored in the majority of patients 24 hours after successful cardioversion for atrial fibrillation; 2) Size of LAA is inversely correlated with probability of restoration of normal LAA function. Our observations also suggest that TEE, performed 24 hours after cardioversion to sinus rhythm, may permit identification of patients with restored LAA function in whom post-cardioversion anticoagulation could be unnecessary.

1071-42 Left Atrial Inflow Propagation Rate: A New Transesophageal Echocardiographic Index of Preload

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Pulmonary wedge pressure (PCWP), an index of preload, is estimated by pulsed (PW) Doppler (Dop) transesophageal echo (TEE) indexes of pulmonic vein and mitral valve (MV) inflow. We postulated that the rate of blood propagating into the left atrium (LAIF-PR) from the left upper pulmonic vein (LUPV) would be a useful measure of PCWP. Thus, 22 (16 M/6 F) critically ill pts on ventilators with mean age 44 ± 17 yrs were studied by multiplane TEE. LAIF-PR was measured in systole and early diastole as the slope of the color M-mode signal entering the left atrium from the LUPV. M-mode was aligned parallel to the LUPV from a long-axis. PW Dop indexes were LUPV systolic/diastolic peak velocity ratio (S/D), MV a-wave to LUPV retrograde a-wave interval (M-Ar), MV early to atrial peak velocity ratio (E/A) and isovolumetric relaxation time (IVRT). *Results:* Mean LAIF-PR (cm/s) in systole = 40 ± 33 (range = 8–109) and in Diastole = 29 ± 23 (range = 6–86). Correlation with PCWP (mean = 19 ± 10 mmHg; range = 3–40) was better for *LAIF-PR* in systole ($r = 0.84$, $y = -0.26x + 30$, SEE = 6; $p < 0.0001$) and diastole ($r = 0.77$, $y = -0.34x + 29$, SEE = 6; $p < 0.0001$) compared to *E/A* ($r = 0.60$, $y = 10x + 5$, SEE = 8; $p < 0.005$), *S/D* ($r = 0.48$, $y = -10x + 31$, SEE = 9; $p = 0.02$), *M-Ar* ($r = 0.51$, $y = 0.06x + 17$, SEE = 9; $p < 0.02$) and *IVRT* ($r = 0.57$, $y = -0.18x + 29$, SEE = 9; $p < 0.01$). Multivariate correlation showed LAIF-PR in systole ($p < 0.0001$) as best predictor of PCWP compared to E/A ($p < 0.01$), S/D (p = ns), M-Ar (p = ns) and IVRT (p = ns). *Conclusions:* LAIF-PR derived by color M-mode TEE aligned with the LUPV is a promising new index of preload.

1071-43 Determinants of pulmonary venous flow pattern in patients with chronic heart failure

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Background: pulmonary venous flow patterns (PVF) have been used to assess severity of mitral regurgitation and pulmonary wedge pressure. However the role of characteristics of mitral regurgitation and the influence of left atrial function in determining PVF were not investigated. *Objective:* The aim of this study was to investigate factors affecting pulmonary venous flow in patients with chronic heart failure (CHF). *Methods:* Right heart catheterization and transthoracic echo-Doppler of PVF were simultaneously performed in 120 consecutive patients with CHF (EF 25 ± 7%) due to dilated cardiomyopathy (idiopathic 63; ischemic 57) who were in sinus rhythm. The following parameters were measured by echo-Doppler: 1) peak velocities of the systolic (X), diastolic (Y) forward PVF; 2) the systolic fraction (SF) calculated as X/X + Y ratio; 3) Maximal (LAVmax) and Minimal (LAVmin) left atrial volumes. The maximal regurgitant jet area (MRJA) and its direction (MRJD) were evaluated by color Doppler. Mean (PWPm), X and V Pulmonary wedge pressures were measured invasively:. The left atrial compliance (LAC) was calculated as (LAVmax-LAVmin)/lnV/X. *Results:* By univariate analysis the best correlation was found between SF and PWP ($r = -74$ $p < 0.0001$). Also other variables but not MRJD were correlated. The stepwise regression analysis identified the PWP ($\beta = -48$ $p < 0001$), The MRJA ($\beta = -27$ $p < 0.0001$) and the LAC ($\beta = 0.30$ $p < 0.0001$) as indepentent predictors of systolic fraction of PVF ($r = 0.81$ $p < 0001$). *Conclusions:* Multiple factors including pulmonary wedge pressure, maximal regurgitant jet area and left atrial compliance can independently condition the profile of pulmonary vein flow.

1071-44 Lone Fossa Ovalis Membrane Aneurysm is an Infrequent Finding in Adults With Cardioembolic Cerebral Events

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Despite their association, a direct role for fossa ovalis membrane aneurysm (FOMA) in pathogenesis of cardioembolic cerebral events (CCE) is not established. 134 pts (age 63 ± 13 yrs, 47% men) with CCE were prospectively studied for prevalence of FOMA and its association with risk factors for CCE. CCE was defined by appropriate neurologic findings and absence of significant carotid stenosis. FOMA was present in 45 (Group 1, age 65 ± 12 yrs, 53% men) and absent in 89 (Group 2, age 63 ± 14 yrs, 44% men). There was no difference in the presence of diabetes (29-vs-31%), hypertension (62-vs-66%), smoking (58-vs-53%), old myocardial infarct (16-vs-12%), mitral valve prolapse (13-vs-13%), dilated left atrium or ventricle (17-vs-25% and 5-vs-11%), spontaneous echo contrast (11-vs-17%), left heart thrombi (0-vs-7%), or aortic atherosclerosis (22-vs-16%) (all p = NS). FOMA pts had higher frequency of patent foramen ovale (PFO, 27-vs-7%, p = 0.001). Stepwise logistic regression analysis identified PFO as the only predictor of FOMA (p = 0.003). After controlling for above-mentioned risk factors for CCE, PFO remained a significant predictor of FOMA (odds ratio 6.1, CI 1.8–21, p = 0.004). A mean of 2.8 clinical/echocardiographic risk factors for CCE was found in 134 pts; only 11 (8%) pts had no identifiable risk factor for CCE: 5/45 (11%) in Group 1 (lone FOMA) and 6/89 (7%) in Group 2 (p = NS). Lone FOMA was present in 3.7% (5/134) of all pts with CCE. *Conclusion:* Lone FOMA is an infrequent finding in adults with CCE and, except for PFO, there is no difference in frequency of identifiable risk factors for CCE between pts with and without FOMA.

1072 Echocardiography: Acute and Chronic Coronary Syndromes

Wednesday, March 19, 1997, Noon–2:00 p.m.
Anaheim Convention Center, Hall E
Presentation Hour: Noon–1:00 p.m.

1072-25 Transcutaneous Ultrasound, Low Dose Streptokinase and EchoGen® are Synergistic for the Lysis of In Vivo Thrombotic Occlusion

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Background: Ultrasound (USD) energy and thrombolytic agents have a synergistic effect on clot dissolution in vitro. We hypothesized that transcutaneous USD combined with contrast microbubbles EchoGen® could augment chemical thrombolysis with low dose Streptokinase (SK) in vivo. *Methods:* Angiographically documented thrombotic occlusions were induced in 44 iliofemoral arteries of 22 rabbits. In 15/22 rabbits, SK (25,000 u/kg) then was given intravenously. The pairs of arteries were randomized to USD and no USD. Low frequency USD (20 kHz, CW, 1.5 w/cm^2) was applied transcutaneously above the area of the occlusion. EchoGen® (2 ml/15 min) was given slowly through the infusion catheter in the abdominal aorta during the ultrasound exposure. In 7/22 rabbits, 14 occluded arteries were exposed to